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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Jakob Schillinger

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EXAMINER

SAINT SURIN, JACQUES M

ART UNIT

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/593,909	Applicant(s) SCHILLINGER ET AL.	
	Examiner J M. SAINT SURIN	Art Unit 2856	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 September 2006 and 26 July 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 23-44 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 23-27, 29 and 31-43 is/are rejected.
- 7) ☒ Claim(s) 28, 30 and 44 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on _____ is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>09/06</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. The drawings filed on 09/22/06 are accepted by the Examiner.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

4. Claims 23-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pangerl (US Patent 5,347,867).

Regarding claim 23, Pangerl discloses accelerometer 20 includes a capacitive transducer 22 having a movable conductive plate 24 disposed between a pair of stationary conductive plates 26 and 28 to form a pair of serially-connected capacitors. An excitation signal, represented as $V_{sub.s}$, provides an oscillating voltage signal across stationary plates 26 and 28, which in turn is coupled across each of the formed

Art Unit: 2856

variable capacitors to movable plate 24. Capacitive transducer 22 thus produces amplitude modulated electrical signals on movable plate 24 which are proportional to acceleration and deceleration forces experienced by transducer 22, such as when installed on a vehicle. Basic capacitive transducers as described so far are well-known in the art for obtaining a signal representative of acceleration and deceleration forces of vehicles (col. 3, lines 46-62). Pangerl further discloses centrally disposed in this opening is a rectangular pattern of conductive material forming an electrode, which electrode forms a first plate of the pair of capacitors represented as plates 26 and 28, schematically shown in FIG. 2. Plates 26 and 28 each have a conductive lead 54 leading to a central pad 55 of a terminal portion 56 (col. 4, line 68 to col. 5, line 6) . However, Pangerl does not particularly disclose or suggest impact sound. Note that Pangerl discloses the disclosed capacitive transducer realizes a unique accelerometer which can be implemented in harsh environments (col. 6, lines 36-39). It would have been obvious to one of the ordinary skill in the art to be motivated to recognize that the accelerometer of Pangerl could be effectively used as vehicle sensor to reliably detect impact sound in a well known manner.

Regarding claim 24, Pangerl discloses a vehicle sensor according to claim 23, wherein the individual, separate measured-value sensing elements are arranged at the measured-value sensor as electrodes in form of a facet structure or of an array (col. 3, lines 46-50).

Regarding claim 25, Pangerl discloses a vehicle sensor according to claim 24, wherein the individual, separate measured-value sensing elements on one side of the

Art Unit: 2856

measured-value sensor comprise a mutual electrode and on the opposite side of the measured-value sensor in facet structure or array form individual electrodes, respectively (col. 5, lines 1-6).

5. Claims 26-27, 32-33, 37, 40-43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pangerl (US Patent 5,347,867) in view of Wang et al. (US Patent 5,838,092).

Regarding claims 26-27, 37 and 42-43, they differ from the prior art by reciting wherein the measured value sensing elements are coupled to the vehicle structure by an elastic or a viscoelastic coupling layer for transmitting the impact sound waves. Wang et al. discloses the system 40 includes a passive viscoelastic damping material (VEM) 42, of the type known in the art, positioned on top of a substrate 44. An active piezoelectric layer 46, of the type known in the art, is positioned on top of the VEM layer 42 (col. 3, lines 13-18). It would have been obvious to one having ordinary skill in the art at the time of the invention to utilize in Pangerl the coupling of Wang because an edge element on the boundary of the piezoelectric layer operates to increase the transmission of active control to the substrate and the edge element directly transmits active forces and moments from the piezoelectric layer to the substrate wherein a higher active control from the piezoelectric layer, while the damping ability of the passive viscoelastic layer is maintained thereby the combination yields more damping than a purely active structure, while preserving the high control available through the use of an active constrained layer.

Regarding claim 29, Pangerl discloses a vehicle sensor according to claim 26,

Art Unit: 2856

wherein the measured value sensor is a piezoelectric, piezoresistive or capacitive sensor (22, col. 4. line 52) and the individual, separate measured-value sensing elements are arranged at the measured-value sensor as electrodes in form of a facet structure or of an array (see col. 3, lines 46-50 of Pangerl).

Regarding claims 32 and 40, Pangerl discloses a vehicle sensor according to claim 26, wherein dimensions of the measured-value sensing elements are smaller than a smallest wave length to be detected of the impact sound (col. 5, lines 34-36).

Regarding claim 33 and 41, Pangerl discloses a vehicle sensor according to claim 26, wherein dimensions of the measured-value sensing elements are greater than a greatest wave length to be detected of the impact sound (col. 5, lines 36-38).

6. Claim 31 is rejected under 35 U.S.C. 103(a) as being unpatentable over Pangerl (US Patent 5,347,867) in view of Wang et al. (US Patent 5,838,092) and further in view of Wiese (US Patent 7,545,294).

Regarding claim 31, Panger in view of Wang does not particularly disclose or suggest wherein the measured-value sensing elements (4.1.5, 4.1.6) are arranged in form of a digital structure or of a self-testing structure. Wise discloses the sensor element is energized while simultaneously measuring the measurement variable by means of a closed switch, in a second step, with the switch opened, the measured value is subsequently converted into a digital signal in an analog-to-digital converter and said digital signal is transformed into a digital output value in a digital switching mechanism connected downstream of the analog-to-digital converter (col. 2, lines 50-55). It would have been obvious to one having ordinary skill in the art at the time of the

Art Unit: 2856

invention to utilize in Pangerl in view of Wang et al. the techniques of Weise because after the measured value has been converted in the analog-to-digital converter, the switch can be firstly opened and can be only closed again if the digital output value present for transmission from the digital switching mechanism requires a raising of the current level. In this case, it may be advantageous that an energization of the sensor element also fails to occur during the processing of the measured value in the analog-to-digital converter or in the digital switching mechanism connected downstream, such that thermal problems are completely avoided to make the above combination more effective.

7. Claims 34-36 and 38-39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pangerl (US Patent 5,347,867) in view of Wang et al. (US Patent 5,838,092) and further in view of Switky (US Patent 5,413,489).

These claims differ from the prior art by reciting a carrier (4.3) for the measured-value sensor, wherein the carrier is embodied as a substrate, a wiring carrier or a foil, wherein the measured-value sensor is connected to the carrier (4.3) via a force-fit and form-fit connection and wherein the form-fit connection between the measured-value sensor and the carrier is a glued spot or a contact layer. Switky discloses the solder-bump flip-chip/C4 process for connecting die 10 to its substrate or carrier 12 provides the highest available density of interconnects, the interconnections can also be achieved by wire bonding, tape automated bonding ("TAB"), elastomeric interconnect, or any of a variety of methods that are well known to those of skill in the art. (5) A shell or cap 14 fabricated from a ceramic or plastic material with B-stage epoxy 16 pre-

Art Unit: 2856

attached by the supplier is affixed to spreader 12 above die 10. It would have been obvious to one having ordinary skill in the art at the time of the invention to utilize in Pangerl in view of Wang the techniques of Switky because force must be applied to buttons by spreader in order to make a reliable electrical connection between the two pieces and the assembly of cover to base pushes base and therefore buttons against contacts on spreader Force must also be applied by plungers against contact pads on printed circuit board in order to make reliable electrical connection between the two pieces thereby making the above combination more reliable.

Allowable Subject Matter

8. Claims 28, 30 and 44 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to J M. SAINT SURIN whose telephone number is (571)272-2206. The examiner can normally be reached on Mondays to Fridays between 9:30 A.M and 6:00 P.M..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hezron L. Williams can be reached on (571) 272-2208. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2856

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Jacques M SAINT SURIN/
Primary Examiner, Art Unit 2856